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THE POTATO ASSOCIATION OF AMERICA

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The Need for a Program of Potato Improvement

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Introduction

Even the most casual observer is aware of the fact that some varieties of crop plants yield better than others. Some varieties are more resistant to diseases and insect pests and for this reason outyield the more susceptible varieties. Others are poorly suited to certain soil and climate conditions and are unable to compete with those that are better adapted. Still other varieties are inherently poor and do not yield well under any conditions.

All of our crop plants were originally wild and when first brought under cultivation must have been greatly inferior to our present varieties. Just how most of our present day crop plants were originated is not definitely known, but we do know that it was a slow and haphazard process and required many thousands of years. On the other hand, the recent investigations in the science of plant breeding made during the past twenty or twenty-five years have shown that there are still unlimited possibilities for further improvement of our cultivated varieties. They have shown also that by using the proper methods, new and better varieties can be produced in a relatively short period of time.

Already hundreds of new improved varieties of many crop plants have been produced. These have completely replaced the older and inferior varieties. Because the potato is propagated almost entirely by tubers and rarely produces true seed,

it has been more difficult to produce new varieties of this crop. Nevertheless, within the past ten years a means of overcoming this difficulty has been discovered and the foundation for the production of new varieties has been laid. We are on the threshold of a new era in potato improvement.

Better Potato Varieties Badly Needed

During the last ten years it has been found that within the potato there are forms which are earlier; forms which have better tuber types; forms which maintain their tuber type under a wider range of conditions; forms more adaptable to growing conditions in major potato growing regions; and forms which give a higher yield than the commonly grown commercial varieties. These results lead to the belief that the varieties now grown are equally poor in regard to other characters. They are very susceptible to most of the diseases. At least, the possibility of isolating forms resistant to virus diseases, scab, rhizoctonia, black leg, fusarium wilt, early blight, late blight, and less important diseases is worthy of serious consideration.

The potato crop is an important one. It ranks third in value of all food crops grown in the United States. The total average yearly production for the United States is over 350,000,000 bushels valued at approximately $400,000,000. Potatoes are grown in every state in the Union under a wide variety of conditions. The profits or losses from potato production influences the welfare of an enormous number of people. The extent of these losses are so large, and the possibility of materially reducing them are so great, that adequate support should be furnished to enable the improvement to be accomplished.

A brief discussion of the problems in the potato industry will show more clearly to those unfamiliar with the situation, the need for improvement.

The average yield of potatoes in the United States is less than 106.4 bushels per acre (see 1930 Yearbook). Of the fifteen leading potato growing countries of Europe, only Italy has as low a yield. In six of the countries the average yield per acre is over 200 bushels. In the United States only a few very limited areas approach this yield. The chief reason for this difference in yield is that the present commercial varieties were produced nearly fifty years ago and were selected for their adaptability to the soil and climatic conditions in the northeastern section of the United States. Lower yields are obtained

in the United States because these varieties are unadapted to the growing conditions over a large portion of the country. In Europe, each country has had to develop its own varieties adapted to its own local conditions. This eventually must be done in America.

Is it possible in regions in the United States that average less than 100 bushels per acre, to raise the yield to approximately 200 bushels per acre without changing the general farming practices? It is not possible to give at this time a definite answer to this question. Preliminary investigations strongly suggest that this can be accomplished. For example, — the Early Ohio has been the standard variety in the Red River Valley of Minnesota and North Dakota. The average yield per acre has been approximately 100 bushels per acre or less. In 1929, in a test plot the yield of this variety was 137.5 bushels per acre. The average yield of 29 selected seedlings was 207.4. These results indicate that yields could be materially increased by the development of adapted varieties.

Low yields are only part of the loss sustained by potato growers due to lack of suitable varieties. There is a distinct need for an early maturing variety with a good marketable type of tuber. The common early varieties, Bliss Triumph, Early Ohio, and Irish Cobbler, are especially poor in tuber type and limited in climatic adaptability. Most varieties retrograde in type under adverse conditions. Some are more sensitive in this respect than others. It has recently been shown that seedlings can be produced which maintain their type under a wide range of growing conditions.

The improvement in yield and quality, as measured by percentage of marketable tubers, that can be attained in the near future may be conservatively estimated to increase the production per acre between 10 and 20 per cent. This will return to the growers approximately $50,000,000 annually without any additional expense. The growers will receive in a single year more than a hundred times the total amount of money that has been appropriated for potato breeding work in the United States.

The commonly grown varieties of potatoes are easily damaged by frost. This is a serious hindrance to the utilization of peat lands in the northern states for the production of late crop potatoes. In other respects these idle lands are the best in America for the production of potatoes. Unseasonable frosts frequently cause serious damage to the early crop. Serious consideration should be given to the development of varieties resistant to light summer frosts.

Breeding for disease resistance offers especially promising results. According to the records of the office of Plant Disease Survey of the United States Department of Agriculture, the average decrease in yield due to diseases (exclusive of insect pests) during the past ten years was 19.8 per cent annually. Efficient seed certification, improved methods of control has kept these losses from being greater. But these enormous losses continue. None of our commonly grown varieties are significantly resistant to the most destructive diseases. The most hopeful outlook for decreasing these losses lies in the production of new and more disease-resisting varieties. Practically no work has been done in breeding for disease resistant varieties in the United States. In Europe, breeding for varieties resistant to black wart has been successful. In 1930 there were 102 varieties listed in Germany which were definitely proven as wart resistant. Forty-five of these were introduced in the last five years. The production of varieties resistant to late blight has received the attention of potato breeders in Europe for over half a century. Dr. K. O. Miller reported in 1930, progress which indicated the problem of combining resistance with the cultivated varieties had at last been solved, and that resistant varieties would soon become a reality. The progress made in Europe in breeding varieties resistant to two of the most destructive diseases of the potato, namely, late blight and black wart, has been cited to show that varieties resistant to the various potato diseases can and will ultimately be obtained.

A Program for the Production of Better Varieties

On account of the extensive nature of potato growing and the wide variety of conditions under which potatoes are grown in the United States, the production of improved varieties is not a local problem. It is of nation-wide importance. Moreover, on account of the difficulty in the production of the seed necessary in potato breeding many localities could not independently carry out a breeding program if they so desired. For the best results extensive cooperation between states is essential. The United States Department of Agriculture with its comprehensive inter-state organization could render real service to a potato improvement program by cooperating with states in a national potato improvement program. Certain favorably located states would necessarily have to undertake the actual breeding work. Some of the other states where potatoes are an important crop would find it desirable to aid

in testing the new varieties and in making selection of seedlings adapted to their conditions. All states interested could make final tests of the more promising seedlings to determine adaptability to local conditions.

For example, the Minnesota Agricultural Experiment Station has developed selfed lines of potatoes for use in breeding stock. For the first time seed producing strains of the chief commercial varieties are available for breeding. These strains, which have been selected for eight generations, breed true for different desirable characters. Recombinations between them offer the possibility of producing varieties resistant to different diseases and adapted to various localities. Some crosses have been made and the new varieties obtained are sufficient to indicate what can be expected from future crosses. However, the enormous task of testing the selfed lines in order to learn their value as breeding stock, the crossing of desirable strains, and the subsequent testing of the thousand of hybrids for yield, quality, disease resistance, etc., is one no single state can carry out alone. Inasmuch as the results of this work are of benefit to the nation, as a whole, it should receive national support. The United States Department of Agriculture could render service by furnishing financial support and technical assistance to those states where progress is being made in potato breeding work, and by aiding in correlating the work being done in the various sections of the country. The individual states could cooperate by avoiding unnecessary duplication of effort and by fitting their program of work into the more comprehensive nation-wide program.

The importance and great value of such a nation-wide program of potato improvement cannot be over emphasized. It is a program offering tremendous possibilities of benefit to American agriculture and one which should be adequately supported. The financial support of potato improvement work is hopelessly inadequate, both in the United States Department of Agriculture and in the state agricultural experiment stations. Those who are interested in agricultural development in general or in potato improvement in particular, should take the necessary steps to see that such a program of potato improvement is adequately supported. The workers in agricultural research have pointed the way. It remains for those who will ultimately benefit to see that the opportunity is not neglected.

Summary

1. All of our crop plants are improved varieties of plants

that originally grew in a wild state. They are the result of thousands of years of haphazard selection by man.

2. Recent investigations in the science of plant breeding have shown how still further improvements can be made in a relatively short time. Many new and better varieties of most agricultural crops have been produced in the past twenty-five years.

3. Because the potato is propagated by tubers and seldom sets seed, breeding has been difficult and consequently has been neglected. Very recently most of these difficulties have been overcome and means of vastly improving the potato crop have been demonstrated.

4. The average yield of potatoes in the United States is lower than any other important country except Italy. The reasons for this low yield are that our present varieties are not suited to soil and climatic conditions found in most sections of the United States, and that they are very susceptible to many destructive diseases.

5. The production of new varieties of potatoes is both a local and national problem. Because of climatic limitations successful breeding can be done in only a few favored localities. Yet new varieties must be tested and selected for adaptability to the conditions of each of the potato growing sections of the country.

6. An adequate potato improvement program can be carried out best through cooperation of the individual states and the United States Department of Agriculture. The essentials of such a program are briefly outlined in this paper.

7. The financial support of potato improvement work is highly inadequate both in the state agricultural experiment stations and in the United States Department of Agriculture. Research workers by their discoveries have shown how potato varieties can be improved. If the potato industry is to benefit from these discoveries more support for a national potato improvement program should be provided.

Dry Weather Potato Growing In Michigan

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The season of 1930 was the driest in Michigan for over 30 years, with a wide variation in rainfall between the northern and central portions of the state. With respect to rainfall, the months of July and August are the most critical as affecting Michigan's potato yield per acre. The rainfall for July, 1930, was less than one-half normal for the entire state, and one-fourth of normal during August. Through the central portion of the state, however, the July precipitation was one-fourth normal, and the August precipitation one-fifth normal. Added to this the fall rains did not come as soon as expected. This condition aroused a great deal of interest in dry weather potato growing, which in itself is a very fortunate reaction. However, the present interest, not confined to potato growing, is an indication that as yet, too many farmers are inclined to base their future plans on a too recent and limited experience of one or two years rather than upon a long time average, and apparently anticipate another extremely dry season in 1931.

Many growers who used commercial fertilizer for the first time in 1930 did not fertilize in 1931, due to disappointment in expected results. It is true that Michigan experiences a drought of some extent nearly every year, and it was very fortunate that during the extreme drought of 1930 that a greater number of experiment and demonstration plots throughout the state were conducted than at any previous date comparing fertilizer applications, hill spacing, and date of planting. In addition, the production methods employed by the eleven 300 Bushel Club members and the 42 entrants in the Michigan Premier Potato Growers' contest give some very significant facts in connection with high yields during a drought.

The three points of usual concern in the production of all crops—soil type, rotation, and the mechanics of soil fitting, acquire added importance in connection with potato production in dry weather. The potato is satisfactorily produced on a limited range of soil type. This is especially true in regard to quality of crop, and potato production in Michigan should be confined largely to the sandy loam type of soil. About 90% of the 300 Bushel Club members annually produce their crops on sandy loam soil. This type of soil will never form a crust nor crack open in dry weather, as will a heavier type, and does

not require so may row cultivations. The root system of any plant must be preserved especially well during the dry season. Row cultivation after the plants are one-fourth grown often destroys a great number of feeder roots, and since the old dust mulch theory of conserving moisture is losing out to some extent in the face of practical demonstration on sandy loam soils especially, there is little need for such cultivation except for the control of weeds.

Besides the importance of soil type in connection with dry weather potato growing, crop rotation may be even more important. Soil condition depends to such a great extent upon the type of rotation that many fields which at the present time do not produce a good grade or yield of potatoes and which are seriously affected by the slightest drought, can be materially benefited by a rotation emphasizing legumes. The building up of humus in this manner will largely offset short drought effects by the better retention of moisture. The application of barnyard manure is a help, but there is not enough applied to materially affect the humus content. The legume is important not only because of its nitrogen fixation properties, but also because much of the legume plant is under ground, penetrating unbroken clay subsoil to a greater depth than any other common crop plant, thereby building organic matter into a deeper layer of soil and giving more chance for the rather tender potato roots to penetrate deeper, which is a real advantage under drought conditions. The resultant more uniform holding of moisture also makes more efficient the use of commercial fertilizer. A great many potato growers are disappointed in potato yields on old pasture sod. A sod of this type is very shallow and practically no organic matter is built into a soil under this condition. The 300 Bushel Club records for several years show that two-thirds of the members raised potatoes on alfalfa, sweet clover, or clover sod, the remainder being grown on a mixed hay sod, with the exception of one or two on new land.

Alfalfa hay may be grown for several years in a long time rotation, or sweet clover may be seeded in grain in the spring, cut for hay or pastured the following year and plowed that fall, with a seeding of rye as a winter cover crop plowed under the following spring and made ready for potatoes.

The mechanical handling and fitting of the soil is coming to be a highly specialized practice with the better potato growers of this state. The objects should be to destroy the sod, destroy germinating weed seeds, and to make a seed bed of good tilth and fineness. Soil handling practices in potato growing vary greatly throughout the state, and proper methods have an important bearing on dry weather yields.

Fall plowing is recommended on most types of soils. During a dry season, a heavy sod, plowed late in the spring may cause a crop to suffer since the sod has not a chance to rot and may interfere with the capillary action of water from below. One-half of the 1930 club members plowed for potatoes in the fall, while the remainder plowed in early spring. The earlier plowing gives an opportunity for better weed control, which is the most important item in connection with the mechanics of soil fitting. Since row cultivation should be limited, weed control must be effected before the plants are very large. This requires dragging or disking about twice the number of times practiced by the average table stock growers. Also, blind dragging after the potatoes are planted and before the plants are well up, as well as the use of a weeder or rotary hoe until the plants are well started will greatly reduce the number of row cultivations required.

Survey records made by the Farm Management department of the college in 1928 in one of the heaviest tablestock producing areas of the state showed that the average grower dragged his field five times and cultivated five and one-half times in the row, and averaged 110 bushels per acre. Despite the check-rowed planting, many of these fields were weedy. During the same season 60 growers joined the 300 Bushel Club with an average production of 357 bushels per acre. These growers averaged slightly over three cultivations in the row after the plants were up, and were able to have their fields free from weeds. The 1930 club members dragged or disked their fields eight times and cultivated twice in the row. Three of the members dragged or disked eleven times and cultivated once in the row. In point of cost several draggings can be made for the cost of one cultivation. Some of the best examples in weed control are fields fallowed in August for quack grass control with a second plowing in the spring. However, if weeds are not controlled before planting frequent cultivation is necessary, but it should be very shallow.

Demonstration Results

Many growers in Michigan are under the impression that 500 or 600 pounds of a high analysis fertilizer will tend to burn up their plants during a drought. Also, even a larger number of growers will have nothing to do with hill spacing of 18 inches or less in the row during a drought. Close spacing of 12 to 14 inches may not give the best results on a soil of low fertility and poor humus content during a severe drought, but potato growing is not recommended on that type of land. The following results of fertilizer and spacing demonstration

should be particularly significant to growers who have to contend with drought conditions.

Replicated plots on fertilizer and spacing were planted on 13 farms in 12 counties and underwent severe drought. All fertilized plots gave an increase of 10 per cent total yield and an increase of 16 per cent in yield of U. S. No. 1 over the non-fertilized plots. A greater increase resulted from fertilizer in 1927, 1928, and 1929, under more favorable weather conditions. During these seasons fertilizer gave an increase in yield of U. S. No. 1 of 21 per cent. The 300 Bushel Club members consistently use commercial fertilizer and an average of 545 pounds per acre was used by these growers in 1930.

In the hill-spacing tests, 12, 18 and 36 inch spacings in the row were used, with rows 36 inches apart. The U. S. No. 1 yields were 70.7, 69.8 and 68.0 bushels per acre, respectively, a very significant result during such a dry season. Also, the closer spacing resulted in less off type potatoes.

The 12-inch spacing gave 9.6 per cent off type; the 18 inch 14.2 per cent, and the 36 inch spacing 21.5 per cent off type. These results are also well substantiated by the potato club and growers contest records. The 300 Bushel Club members averaged a spacing of 14 inches in the row. The entrants in the Premier Potato growers' contest which is open to table-stock as well as certified seed growers, spaced 16 inches apart in the row. Twenty-four of the 42 in the contest spaced their plants 15 inches or less in the row and averaged 30 bushels per acre more than those who spaced over 15 inches in the row.

Results of earlier planting tests were not in accord with the ideas of many growers who think that early planting of late varieties such as Russet Rural result in lower yields.

In the date of planting plots potatoes were planted about May 15, May 30, and June 15 on 18 farms in 14 counties. In regard to set the planting dates in the order named gave 7.6, 6.7, and 6.3 tubers per hill respectively. Yields of U. S. No. 1 were 89, 82 and 64 respectively. These results indicate that the earlier plantings had an advantage during the drought of 1930.

The value of sufficient and proper application of spray is beyond question in Michigan. Spray is particularly important with the earlier planted potatoes to control the early infestation by leaf-hoppers and bugs. Also, during a season such as 1930, everything must be done to preserve the green leaf area of the plants if later rains are to be of any benefit to the potato crop. The result of many spray tests conducted during the 1930 drought showed an average increased yield per acre of 30 bushels in favor of careful spraying with Bordeaux mixture.

It is evident from the 1930 tests that good cultural practice, including early and thorough fitting of the seed bed; the plowing under of organic matter, early planting, close spacing, the judicious use of commercial fertilizer and thorough spraying with Bordeaux mixture are all important in increasing yields under dry weather conditions as well as in seasons of normal rainfall.

Crop and Market News

Production Estimates Reduced

(Contribution from Bureau of Agricultural Economics)

The total production of potatoes, including both the early and late crops, is forecast at 361,036,000 bushels, on a reported condition of 67% of normal on September 1. During August, there was an indicated decrease of 9,500,000 bushels in the crop prospects for the country as a whole. While it is possible that growing conditions may prove more or less favorable than usual between now and harvest, the forecast on present conditions points to a total crop about 5% larger than that of last year. Excluding the estimated production in 13 southern states and in Delaware, Maryland and Virginia, which are largely an early crop proposition, the production in the remaining 32 states is forecast at 295,938,000 bushels, compared with 303,283,000 a month ago and an estimated production of 289,903,000 bushels in 1930. These 32 states, which contribute most of the intermediate and late potato supply are, therefore, expected to have a 2% larger crop than last year. The major declines in crop prospects during August occurred in the North Central and Western states, as a result of hot weather and lack of water supplies.

The following tabulation shows last year's production and the forecast for the 1931-32 season in late states having 5,000,000 or more bushels of potatoes:

State	1930	1931	State	1930	1931
Maine	46,060,000	49,735,000	Iowa	5,180,000	3,570,000
New York	23,780,000	27,120,000	Missouri	6,206,000	4,416,000
New ersey	7,680,000	7,854,000	North Dakato	7,345,000	8,840,000
Pennsylvania	18,711,000	23,546,000	Nebraska	9,900,000	7,750,000
Ohio	9,450,000	10,080,000	Idaho	26,910,000	23,400,000
Indiana	4,984,000	5,494,000	Colorado	15,400,000	7,950,000
Michigan	13,688,000	19,500,000	Washington	8,580,000	7,084,000
Wisconsin	18,056,000	20,100,000	Oregon	5,400,000	4,945,000
Minnesota	21,350,000	27,552,000	California	5,775,000	5,476,000

Prices were extremely low during the fore part of September and had not yet recovered by the latter part of the month. The closing report from New Jersey showed an f. o. b. level of 85c per 100 pounds of best sacked Cobblers in that state. Long Island Cobblers were ranging 75c-80c at shipping points. The same variety of potatoes in Aroostook county, Maine, was returning only 45c-50c, with Green Mountains at 50c-55c per 100 pounds. Wisconsin Cobblers were bringing only 65c-70c, f. o. b. shipping points. Best Idaho Russet Burbanks averaged 70c on a cash-track basis, with Rurals at 40c per 100 pounds. The Chicago carlot market had advanced temporarily around the 20th of September but then declined again. Minnesota Cobblers were selling in that market at 75c-90c, with Wisconsin stock at 80c-95c and Idaho Russets at $1.60-$1.75 per 100 pounds. Wyoming Bliss Triumphs brought $1.25 in Chicago. "Futures" for October delivery were averaging $1.47 per 100 pounds of Idaho Russet Burbanks, with Round Whites at 87c and Maine Green Mountains for Boston delivery at 96c. The same kinds of potatoes for January delivery were bringing $1.59 and $1.03 and $1.15 respectively. Eastern jobbing markets were weak and rather dull.

Carlot movement, week by week, has been much lighter than that of last summer. During the third week of September, the 19 important shipping states forwarded 3,700 cars of potatoes, compared with 4,710 during the same period in 1930. Maine and Idaho were leading, though many other sections were moving considerable volumes of this product. The total shipments to September 19 from these important states were about 17,130 cars, as against 26,290 the year before. The only section which, by that time, registered a larger total than a year ago were Idaho, Michigan, western New York, Oregon and Utah. The New Jersey season was closing with a record of only 5,000 cars shipped by rail, compared with 6,600 during the 1930 season.

Chicago Mercantile Exchange

Sale of potatoes for future delivery on the Chicago Mercantile Exchange totalled 680 cars during September, the second largest total recorded this year. Prices trended lower at the close of the month, compared to opening prices. October Idahoes closed at $1.42, off 10c, January Idahoes at $1.56, off 9c, October Round Whites at 82c, off 18c, January $1.11, off 4c, October Green Mountains 82c, off 29c, and January $1.15, off 10c.

Bearish sentiment dominated the trading throughout the month and selling was fairly heavy. Still there was enough support to hold the futures above the levels touched in spot

markets, which encouraged a certain amount of hedging, particularly in Maine potatoes.

The major reason of course was the heavy surplus of stocks indicated by the crop estimate. Toward the close of the month, there was a slight change in sentiment as far as the January deliveries were concerned.

Reports indicated that while supplies were heavy, the supply of No. 1 potatoes was somewhat small, comparatively. Therefore it was felt that growers might be inclined to destroy or use for feed some of the No. 2's which were selling at such prices as to hardly make it profitable for them to be harvested and sent to market.

If this holds true through the next few months, January may see a sharp cut in supplies on hand. The natural result would be a firming up of the futures.

Bear this in mind, the trade is cautious, with an increasing tendency appearing to go on the buying side.

Tabb Potato Service

Market Bulletin No. 280, October 1, 1931

Prices are a little lower all over the country again this week, but the shipments continue gradually increasing. The late harvest is getting under way in all states, and a considerable volume of potatoes has always been marketed during October, almost regardless of price. Prices are ruinously low—too low for the size of the crop; but farmers are forced to sell a part of their crop and the trade is showing little disposition to store normal fall supplies at the receiving end. If the trade persists in this policy, the only answer is prices so low in the country that the growers cannot sell at a profit over harvesting costs. In any event, the chances are that the markets will work lower before they do higher.

Late September rains and the absence of frost in most states are keeping a great many vines alive, and the potatoes are without doubt increasing in size. It is hardly thought that the October estimate will show an increase, but if frost holds off well into the month, there is almost bound to be some improvement.

It looks like another late fall, and a considerable volume of potatoes in various parts of the country are still too immature to harvest. With favorable moisture conditions, they will keep putting on size and tonnage, and it is entirely possible that later estimates will reflect the result of this late growing period. Prob-

ably the most serious danger is that the maturity in many instances may be delayed until a heavy freeze comes along.

It will be noted that the September carlot shipments were the smallest and that the October 1st prices are the lowest of any recent year. Both are undoubtedly due to the utter absence of speculation, restricted credit, lack of confidence on the part of buyers, and the generally low prices prevailing on commodities the world over. There is nothing in the foregoing comparisons, however, to indicate that consumption is falling off or that it will be materially less than normal during the season. Considering the heavy movement by truck, the country could not be expected to consume more than 17,000 cars during the month of September; and when 24,000 cars were shipped in 1929 and 25,000 in 1927, it merely indicated that the trade at the receiving end was putting away from 6,000 to 8,000 cars for later use.

We rather anticipate that the story of the October carlot movement will be pretty much the same. The trade all over the country is buying on a hand to mouth basis, and we see few if any indications of any change in this policy. The country trade in particular, which usually absorbs thousands of cars of potatoes during October in five and ten car blocks, putting the bulk of them away for winter use, is not doing so this season and we seriously doubt whether they will. This will be partially due to lack of finances and credit, but mostly we believe due to lack of confidence in the stability of the market on any commodity. We hope we are wrong in this respect, but that is the way the situation sizes up at the present time. It looks to us as though most of the storing and speculation this fall will be at the shipping end.

Under such conditions, we all know from experience that almost unbelievably low prices can be reached temporarily. Without doubt , the outlet for supplies will improve from what it has been during the past month, but whether or not it will keep pace with the increased shipments during the harvest period is doubtful. The tendency will be for supplies to start accumulating in the large terminal markets, which of itself tends to depress prices. Shipments jumped to over 1,100 cars yesterday for the first time, and the real test of the markets will probably begin next week.

Most of the terminal markets were about steady and unchanged this morning, but trading is awfully slow and there is almost no outside demand. Chicago prices are ranging mostly from 80c to 90c per cwt. on Wisconsins and Red River Ohios; $1.45 to $1.65 on U. S. No. 1 Idaho Russets, depending on the size and quality; and mostly from $1.00 to $1.05 on No. 2 Russets. Triumphs are ranging from $1.00 to $1.30, and a car of Colorado McClures sold at $1.40.

New York city is dull at mostly around $1.45-1.50 on 150-pound bags of Long Island and Maine Green Mountains, and Boston is slow at around 80c cwt. delivered on the Maine Mountains. Prices to the growers in various parts of the country are about as follows: 40c to 50c per barrel of 165 pounds bulk in Maine; 30c cwt. bulk in Michigan; 35-40c cwt. bulk in Wisconsin; 25c cwt. bulk on Red River Ohios in Minnesota and North Dakota; 20c cwt. bulk on Red River Cobblers; 40-45c cwt. bulk outweights on U. S. No. 1 Idaho Russets; and 10c per cwt. bulk on Idaho No. 2 Russets. Just about all of the water has been sqeezed out of the above prices, but there is nothing in sight at the moment to bring about an early improvement.

It is true that the demand for northern and western potatoes is opening up to a better advantage in all of the southern states, due to home-grown supplies cleaning up. Just about all of these local potatoes are exhausted, with the exception of southern Louisiana, and there will be a broader demand for Colorado, Idaho, Nebraska, Minnesota and Wisconsin stocks in the southern and southwestern states. Due to the scarcity and small size of the Brown Beauties in Colorado this season, quite a few Idaho No. 2's and combination grade Russets are expected to go to such states as Oklahoma and Texas, which will relieve Chicago to that extent. It must be remembered, however, that the south has a large sweet potato crop, and that prices are very low on everything the southern states have to sell.

Another factor is that the fall crop of potatoes in Texas and Louisiana will probably be the largest ever produced. The lower Rio Grande valley acreage was increased from 15 to 20% over last season, and although there is no official data available on Louisiana, it is certain that a great many of the small potatoes left over last summer have been planted as a fall crop. This crop was planted the latter part of August, and will come on late in November.

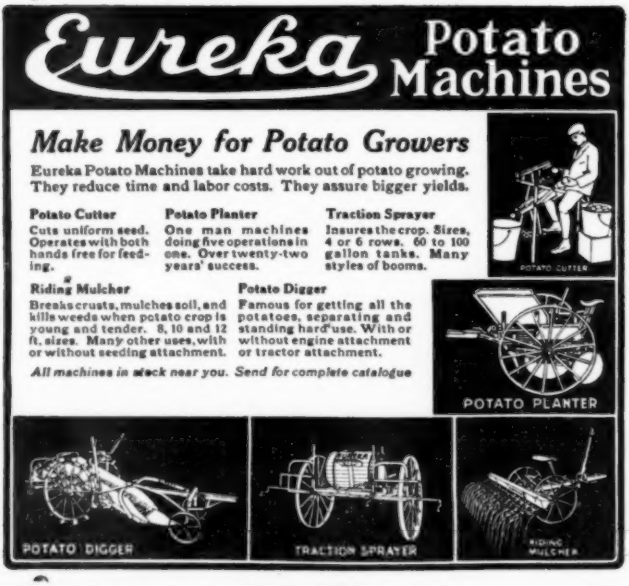
About the most interesting situation from a crop standpoint this season is the big drop in Colorado production, due to the shortage of water for irrigation and lack of rainfall. It is now thought that the San Luis valley will have only about 3,000 cars, compared with around 10,000 a year ago, and these will average mostly small and undesirable. The Greeley district will have around 2,500 cars of late potatoes of good average quality. The Carbondale section has around 1,000 cars of poor quality, while the Monrose district has around 1,300 cars of fair quality. This makes an estimated total of less than 8,000 cars for Colorado, compared with over 18,000 last season.

The Nebraska crop is also somewhat short from last season,

particularly in the dry land sections where the August rains did not materialize as they did a year ago. The irrigated district in the Platte River valley will have probably around 4,000 cars of better quality stock than a year ago, but the dry land sections are poorer and the sizes smaller. The entire Nebraska crop is now estimated at from 7,000 to 7,500 cars, compared with 9,159 shipped last season.

Idaho had some good rains during September, and the bulk of the crop is still growing and making tonnage, although it is doubtful whether the quality is improving. The frost last week cut down the vines only around Aberdeen and on the Egin Bench near St. Anthony, but a 32 degree temperature was again reported at Idaho Falls on Monday night of this week. This evidently caught some more of the vines, but the southern part of the state was not affected.

Additional information this week all confirms previous estimates that only from 33 1-3 to 40% of the Russet crop will grade U. S. No. 1 This compares with approximately 60% last season. Some fields are excellent, while others run almost all No. 2's. These No. 2's are now worth only 10c per cwt bulk, and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at that price, there is no money shipping them to the Chicago market after freight, selling and sacking charges are deducted. It is costing the Idaho growers from 11c to 13c per cwt. gross to have their crop harvested, and quite a few of them have made contracts on this basis. This means that where a crop runs heavily to No. 2's, it is not worth harvesting if the potatoes are sold at the present time. The natural result will be the abandonment of many crops, and hardly any of the growers will spend a great deal of money taking care of their poor, off-grade, rough potatoes. We know of some growers that are merely pitting their No. 2's in the fields.

Theoretically, a 23,400,000 bushel crop in Idaho would be equivalent to around 27,000 cars of marketable potatoes, if both the No. 1's and No. 2's moved as they have during recent years. According to present information, however, probably not more than 10,000 cars of this total will grade U. S. No. 1, and so long as prices continue around present levels, the No. 2's are not much of a factor. When this situation is taken into consideration along with the short Colorado crop, it seems that the western outlook should not be altogether hopeless for the entire season. The difficulty this fall, though, is the very low prices prevailing

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in the Chicago territory, which has been the principal outlet for Idaho Russets during recent seasons. Washington and Oregon will monopolize the northern California markets, and the Yakimas are already beginning to show up in Los Angeles. The southwestern states will take combination and No. 2 grade Russets, but will not pay the premiums asked for the No. 1's for any volume.

Another handicap that the Idahos have this season is that the sizes are not running near as large as they did last year. This tends to link them more closely with the really better than average quality of the Wisconsin and Minnesota potatoes in all of the large central markets. In fact it seems that prices all over the country are linked very closely together this fall and all markets are likely to move in unison.

Notes

CANADA

According to a report issued by the Dominion Fruit Branch, crop conditions in September indicate a total yield of 53,569,000 cwt., an increase of approximately 10 per cent over last year's total production of 48,241,000 cwt.

The increase in production is confined largely to the provinces of Quebec and Ontario where the major proportion of the crop is disposed of for local consumption. The crop in the Maritime Provinces is smaller by about one million cwts. this year as compared with last.

With the exception of some sections in the prairie provinces, weather conditions have been mostly favorable. No serious outbreak of late blight has been reported, and the general quality of the crop is very good.

Prices quoted for potatoes are the lowest in years and the demand is weak, but is expected to show some improvement soon. The certified seed crop is now being harvested and is of high quality. The crop should total between four and a half and five million bushels. The demand for seed for fall shipment is slow at this time compared with former years. The seed exhibits at the fall fairs are expected to be more numerous than ever before.

—JOHN TUCKER.